

REMARKSClaim Rejections

Claims 1, 4, 7, 8, 10-12, 14-16, 18, 19, 21-24, 28, 31, 41-45, 53-56 and 58 are rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. 5,948,396 ("Das").

Referring to Das, Abstract and column 1, line 60 through column 3, line 16, the Examiner stated that Das discloses a hair fixative amphoteric polymer composition comprising a first polymer with anionic character and a second polymer with cationic character. The Examiner further stated that Das discloses that ammonia can be added to the polymer (Das column 3, lines 52-56). The Examiner also stated, referring to the examples of Das, that although Das does not expressly disclose an interpenetrating network of polymers (IPN), Das' composition is inherently an IPN, based on the method of manufacture described by Das.

Applicants' Response

Applicants disagree with the Examiner's interpretation of Das. Examination of this reference supports neither the Examiner's assertion that Das anticipates the pending claims nor the Examiner's conclusion that Das renders the pending claims obvious.

Das does not Anticipate the Pending Claims

The composition of Das comprises is a single polymer, not two different polymers (a polymer with cationic character and a polymer with anionic character), as required by Applicants' base Claim 1. Referring to Das, column 1, line 66 through column 2, line 8, Das states:

The hair fixative polymer is an amphoteric polymer that contains, by weight, [...] 1-20 percent of an acid-containing ethylenically unsaturated monomer [...] and 1-20 percent of an amine-containing ethylenically unsaturated monomer [...]. (*Emphasis added.*)

Das further explains in column 2, lines 35, 45, 57 and 66, that the hair fixative polymer includes various monomeric components, some of which are optional but none of which is described as a

second polymer. Because the bimodal polymer composition of Das does not comprise a first polymer with anionic character and a second polymer with cationic character, as required by Applicants' base Claim 1, Das fails to anticipate Claim 1 as well as claims dependent thereon.

Reconsideration and withdrawal of the rejection are respectfully requested.

Das Fails to Render the Composition Defined by Pending Claims Obvious.

As explained above, the composition of Das comprises a single amphoteric polymer, not two different polymers, one having an anionic character and the other having a cationic character, as required by Applicants' base Claim 1. There is neither a teaching nor a suggestion, nor would one of skill in the art be motivated in view of Das, to modify the disclosed composition by replacing a single polymer with two polymers. Moreover, a single polymer cannot, by definition, form an interpenetrating polymer network (IPN). An IPN is, however, an advantageous property of the Applicants' claimed composition.

It is known in the art of hair fixatives that an IPN of higher molecular weight polymers confer on the compositions advantageous properties, including mechanical strength and requisite viscosity. As Applicants previously argued, in order to manufacture the composition defined by Claim 1, one monomer is polymerized in the presence of a polymer of another monomer, thus forming an IPN. However, it is also known in the polymer art that as the molecular weight of the polymer grows, so does the tendency of a mixture of a bimodal polymer composition to coagulate, *i.e.* to precipitate out of the solution, likely due to electrostatic interaction between the side groups on the first and the second polymer chains. As a result, prior to the Applicants' invention, producing a *stable* composition that includes a first polymer with anionic character having a molecular weight ranging from about 1,000 Daltons to about 1,000,000 Daltons, and a second polymer with cationic character having a molecular weight ranging from about 1,000 Daltons to about 1,000,000 Daltons, wherein the polymers form an interpenetrating polymer network, was difficult if not impossible.

Applicants discovered that a stable composition described above can be obtained if the polymerization of the second monomer proceeds in the presence of a so-called "blocking agent". A blocking agent is an additive that partially neutralizes the charged side groups on the first

polymer, thus allowing the second polymer to form without precipitating the mixture due to electrostatic interaction between the two polymer chains.

Applicants further discovered that using volatile blocking agents confers additional advantages. Specifically, when a volatile blocking agent is used, the polymer mixture of Claim 1, in addition to being stable, can undergo further, so-called secondary IPN formation, when and if the volatile blocking agent is allowed to evaporate.

With reference to Examples 1, 2 and 5 (Examples 1 and 2 are found on page 15 and Example 5 is found on page 22 of the instant specification), Applicants direct the Examiner's attention to the presence in the final composition of 28% by weight "aqua ammonia". This component is employed as a volatile blocking agent. Its presence during the manufacturing, packaging, storage and shipment of the polymer composition of Claim 1 confers stability on the composition defined by Claim 1, as amended. Its evaporation upon application of the composition defined in Claim 1, as amended, onto hair results in formation of a secondary IPN. The formation of the secondary IPN, in turn, results in an improved hair fixative product. For example, the polymer composition defined by Claim 1, as amended, sets before so-called "hair droop" occurs, resulting in a better hair hold under humid conditions.

Das fails to teach or suggest a compositions having interpenetrating polymer network of two different polymers having different ionic character, and further having the polymer molecular weight distribution as claimed by Applicants. Therefore, Claim 1 is not only novel under 35 U.S.C. § 102, but also non-obvious under 35 U.S.C. § 103 over Das.

Reconsideration and withdrawal of the rejections are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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